Kidneys from Very Old Donors Benefit Very Old Recipients

By Bridget M. Kuehn

Older kidney recipients can benefit from organs from older donors. But previous cerebrovascular disease may reduce the survival benefits of these kidney transplants, according to a recent study.

Kidney transplants offer many advantages over dialysis for people with end stage renal disease (ESRD). But a shortage of donors can make it particularly difficult for older patients to secure a donor organ, said Amado Andrés, MD, transplant coordinator at the Hospital Universitario 12 de Octubre in Madrid, Spain. Kidneys from older donors, which may have reduced function owing to age-related conditions, are a poor bet for younger patients. But in older patients with shorter life expectancies these organs may be sufficient.

“The ideal match for renal transplantation in old and very old recipients are old or very old kidney donors,” Andrés said.

However, the practice is not very common in Spain or other countries because ESRD patients age 70 and up often have serious cerebrovascular comorbidities, said Andrés. The Eurotransplant organization has an "old for old" kidney transplant program (Schlipper et al., Ciba Transplant 2001; 15:100–105). But although the program often uses donors from organs older than 70, it typically transplants them in patients younger than 70, Andrés said. And many countries do not have many older organ donors. Spain, with its relatively latecomer to this aspect of regenerative medicine.

"Before going into more detail regarding research strategies being pursued to generate new tissue, the tenacious work over the past decades on xenotransplantation should be discussed. Although many obstacles have been encountered along the way to developing the pig xenotransplantation strategy, such as the discovery of unforeseen layers of immune protection against cross-species engraftment and the identification of porcine endogenous retroviruses as immune protection against cross-species engraftment and the identification of porcine endogenous retroviruses as a significant risk to human recipients, this field has undergone a revitalization with the discovery of new tools for genome modification. Outcomes of grafting tissues from new generations of multigene knockout pigs into primates show increasing tolerability, and there is good reason to be optimistic about this approach.

The possibility to generate entirely new and patient-specific kidney tissue gained traction when it was shown that pluripotent stem cells derived from adult humans that pluripotent stem cells derived from adult humans specify kidney tissue gained traction when it was shown that pluripotent stem cells derived from adult humans.

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they require [recipient] to be absent of cardiovascular comorbidity," he said.

Andrés and his colleagues have begun to extend kidney transplant eligibility to older patients with some cardiovascular morbidity using kidneys from older deceased donors. In their retrospective analysis of 155 kidney transplant recipients aged 70 and older, the median donor age was 77 and the median recipient was 75. The 3-year survival rate for recipients was 73.1% and the 5-year survival rate was 67.1%. About 16% of patients died in the first year after transplant. Graft survival, censored for death, was 83.4% at 3 years post-transplant and 80.8% 5 years post-transplant.

The only factor associated with worse survival was a history of cerebrovascular disease (HR 5.12, p=0.27). A history of diabetes was the only factor associated with graft loss (HR 4.40, p=0.0001).

“Our experience opens the door for the administrators of Western countries to promote organ donation in the elderly [as Spain does],” Andrés said. “[It] also demonstrates that patients of very advanced age can receive kidney transplant, improving survival and quality of life, without competing with the youngest patients on the waiting list.”

Jon Kobashigawa, MD, director of the Heart Transplant Program at Cedars-Sinai Medical Center in Los Angeles, noted that currently many older organs are not being used in the United States. His program does use older organs for older donors.

“It’s a precious resource that could be used for a good cause and the benefits greatly outweigh the risks,” he said.

He acknowledged that outcomes may not be as good for older transplant patients as for younger ones, but the improvement in quality of life for older recipients is still substantial. One factor that might hold some US programs back from participating in older donor/older recipient transplants is the way the programs are regulated. All US organ transplant programs are overseen by the United Network for Organ Sharing (UNOS) and must meet certain thresholds for recipient and organ survival. Because older organs and older donors may not survive as long it could cause some programs, particular smaller ones, to be flagged by UNOS.

“Regulatory issues do make programs hesitant to take on older donors,” he said.

He said it is not surprising that prior cerebrovasc-ular problems or diabetes were associated with worse outcomes in the study. He noted his program typically reserves the limited organs available for those patients with the lowest risk factors.

“We are taking pains to achieve best outcomes,” he said.

Andrés presented results from his study at Kidney Week 2017.